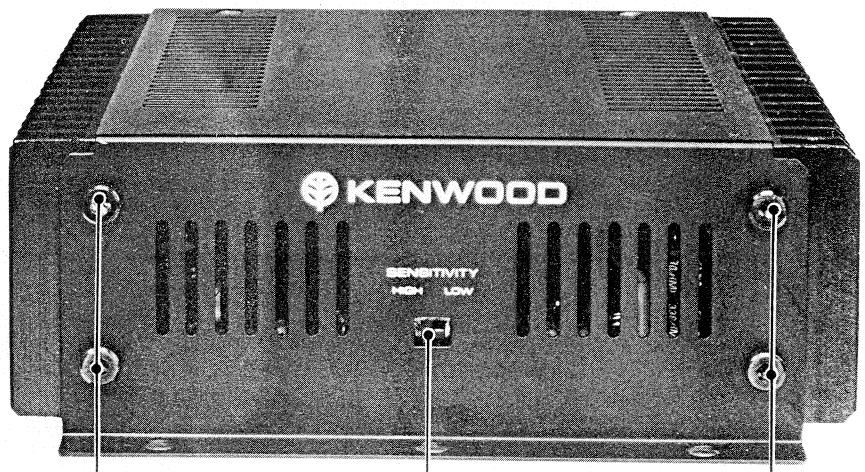
SERVICE MANUAL

KENWOOD®

KAC-887

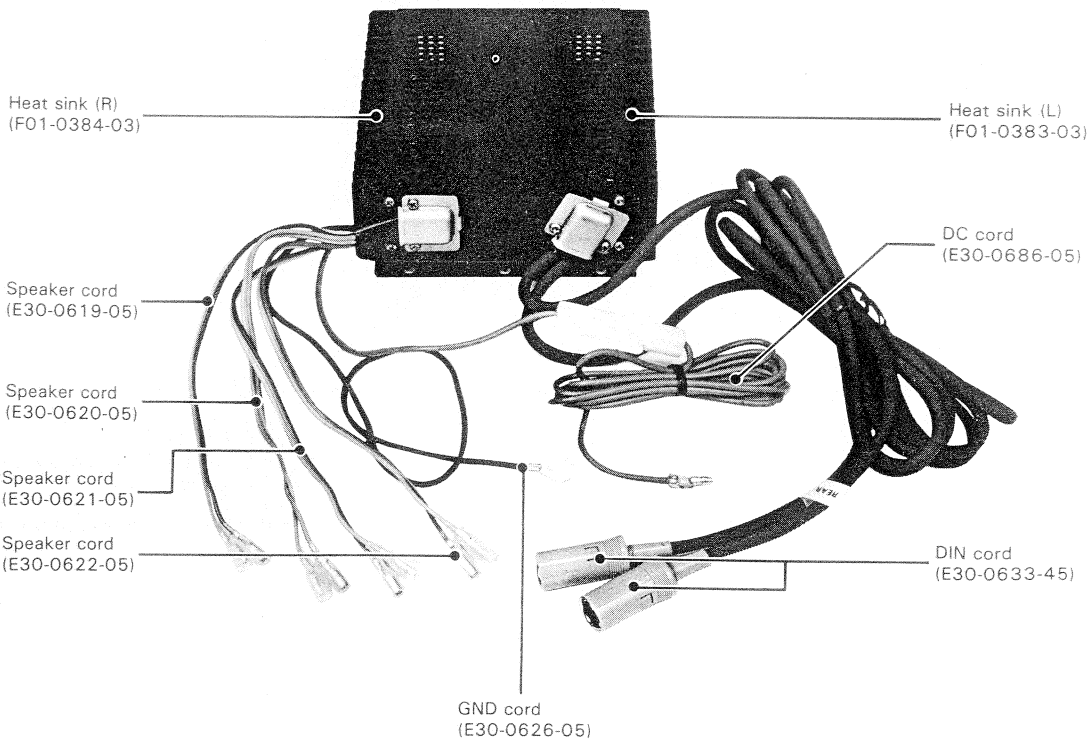
4 MAIN AMPLIFIER



HEX. socket head bolt
(N09-0390-05)

Slide switch
(S31-4010-05)

HEX. socket head bolt
(N09-0390-05)



Heat sink (R)
(F01-0384-03)

Heat sink (L)
(F01-0383-03)

DC cord
(E30-0686-05)

Speaker cord
(E30-0619-05)

Speaker cord
(E30-0620-05)

Speaker cord
(E30-0621-05)

Speaker cord
(E30-0622-05)

DIN cord
(E30-0633-45)

GND cord
(E30-0626-05)

DISASSEMBLY FOR REPAIR

DISASSEMBLY

Remove the metallic cabinet and bottom plate to enable replacement of resistors, capacitors and transistors. Remove the lead holder and rear panel before replacing ICs. It is not always necessary to remove the lead holder and rear panel, if a flexible screwdriver is available.

① If both ICs on one heat sink block are defective, unsolder all the IC pins and remove the screws holding the heat sink to the PC board.

② Pull out the ICs and the heat sink from the PC board and replace them with new ones.

③ If one of the ICs on a heat sink block is defective, remove the black heat sink.

④ Remove screws holding the small heat sink to the PC board.

⑤⑥ Incline the heat sink in the direction indicated by the arrow ⑤, remove the screws holding the IC to the heat sink and replace it.

⑦ Unsolder the terminals to replace the capacitor assembly or the choke coil.

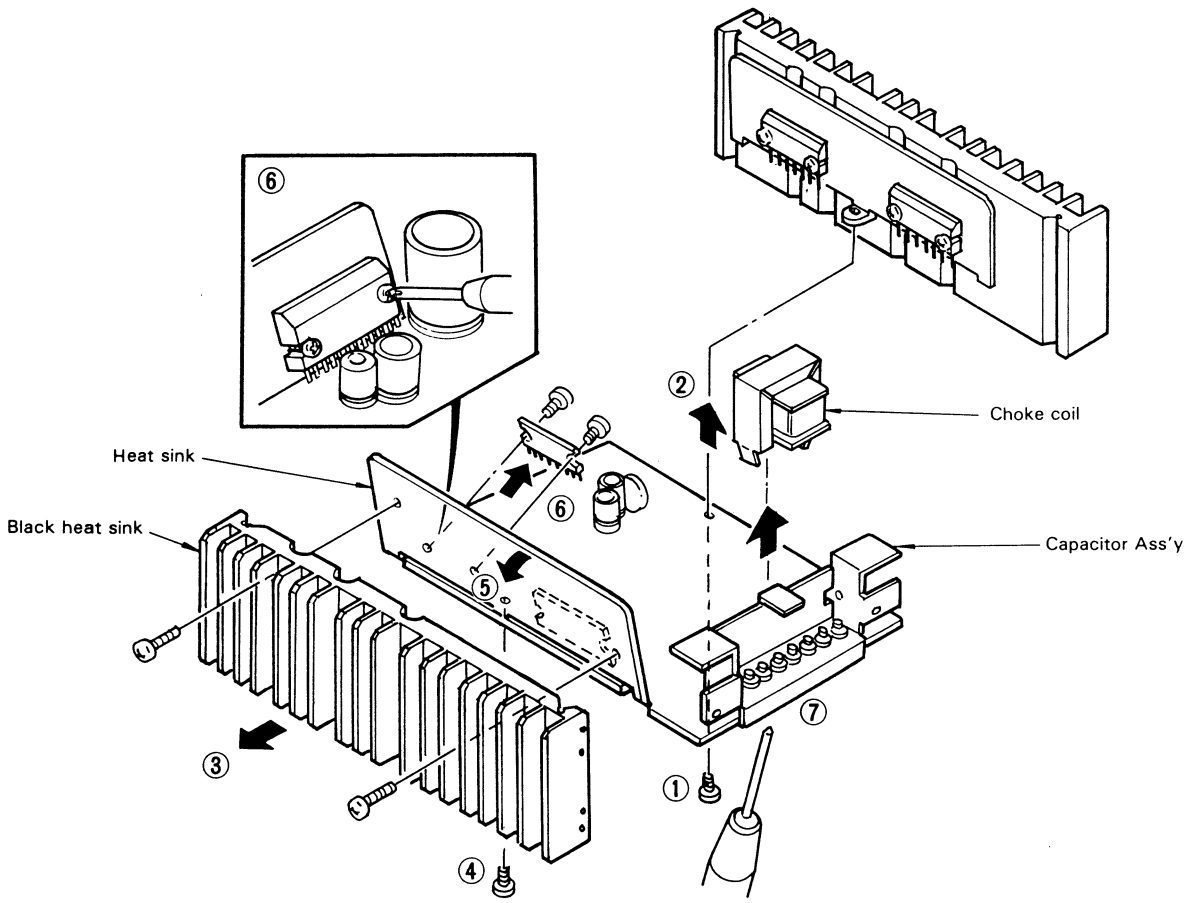


Fig. 1

CAUTION:
To avoid damaging the power IC by heat, apply the thermal compound to the back of the power IC.

DISASSEMBLY FOR REPAIR / CIRCUIT DESCRIPTION

CHECKING PROCEDURE

Connect the GND pattern of the input circuit and the body of sensitivity switch to that of the output circuit or the chassis of the capacitor assembly, then connect terminal 3 of the DIN cord to the power source before checking voltages.

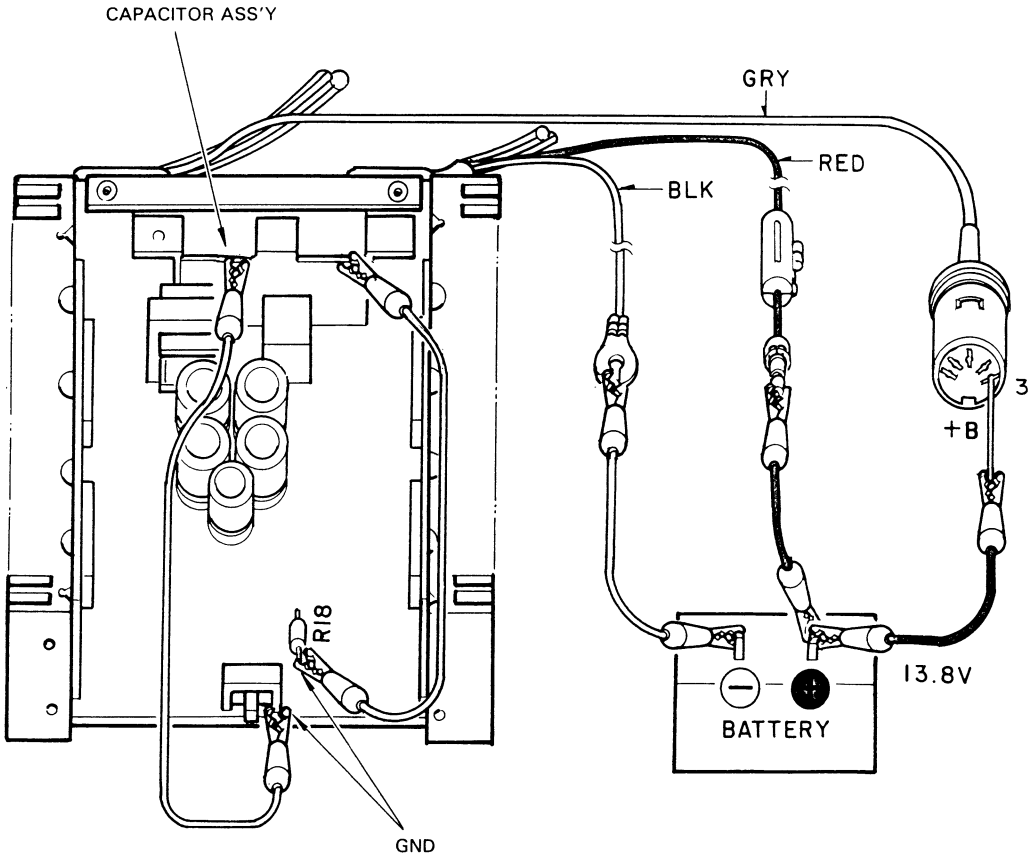


Fig. 2

CIRCUIT DESCRIPTION

1. Power ON/OFF circuit

No power switch is provided on the exterior of the KAC-887. Instead, a relay and transistors (Q5 and Q6) are used to turn the power ON and OFF. The voltage supplied through terminal 3 of the DIN cord is used to control Q5 and Q6. When voltage is supplied, Q5 and Q6 are turned ON to actuate the relay so that the power is fed to the power amplifier circuit. When it is turned OFF, the relay is released and the power amplifier is turned OFF.

CIRCUIT DESCRIPTION

2. μPC 1230H

This IC is designed so that the IC and speaker are protected against shorts which may occur between the output terminal and ground when the IC is used in the BTL-OCL connection.

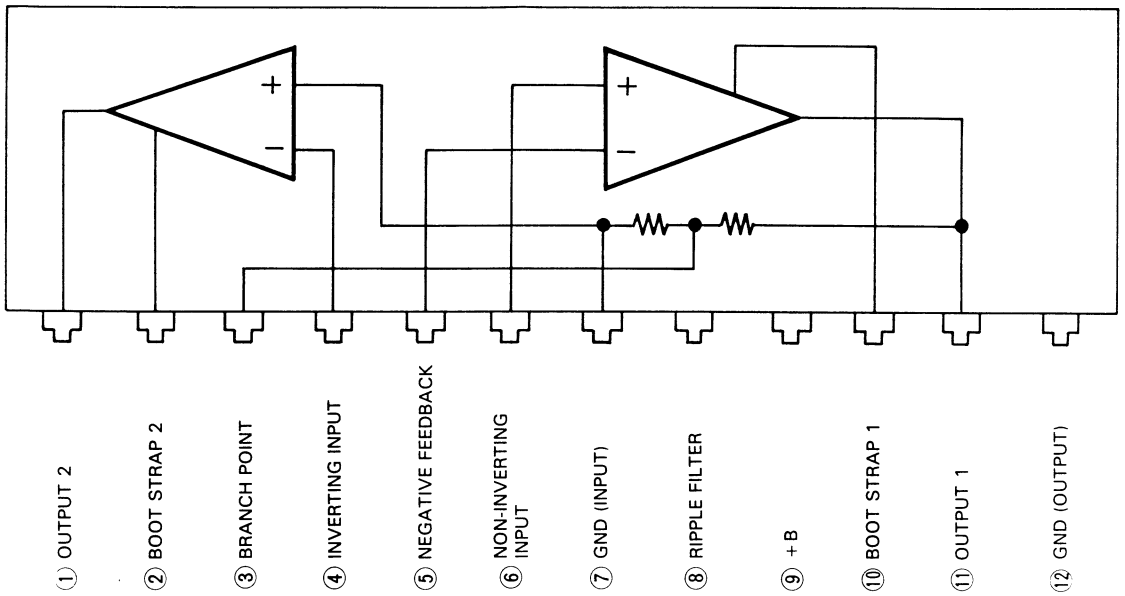


Fig. 3

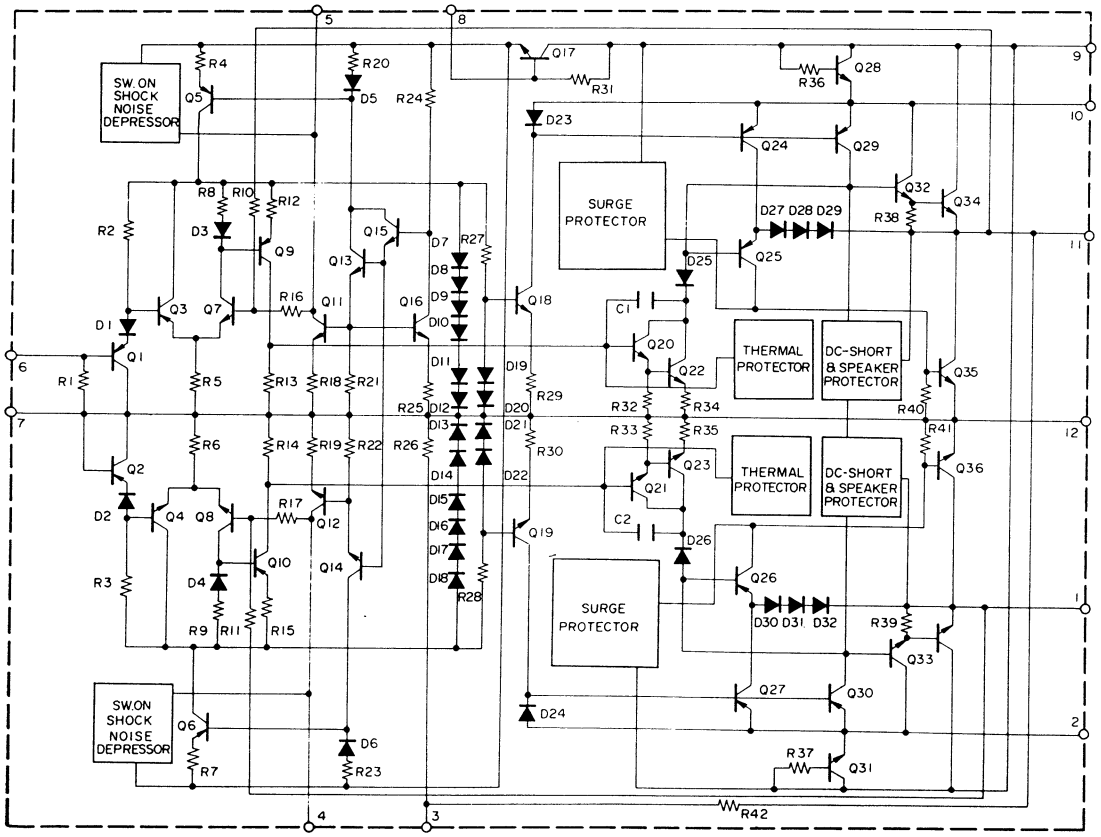


Fig. 4 SCHEMATIC OF μPC 1230H INTERNAL

CIRCUIT DESCRIPTION

3. ISOLATION AMPLIFIER

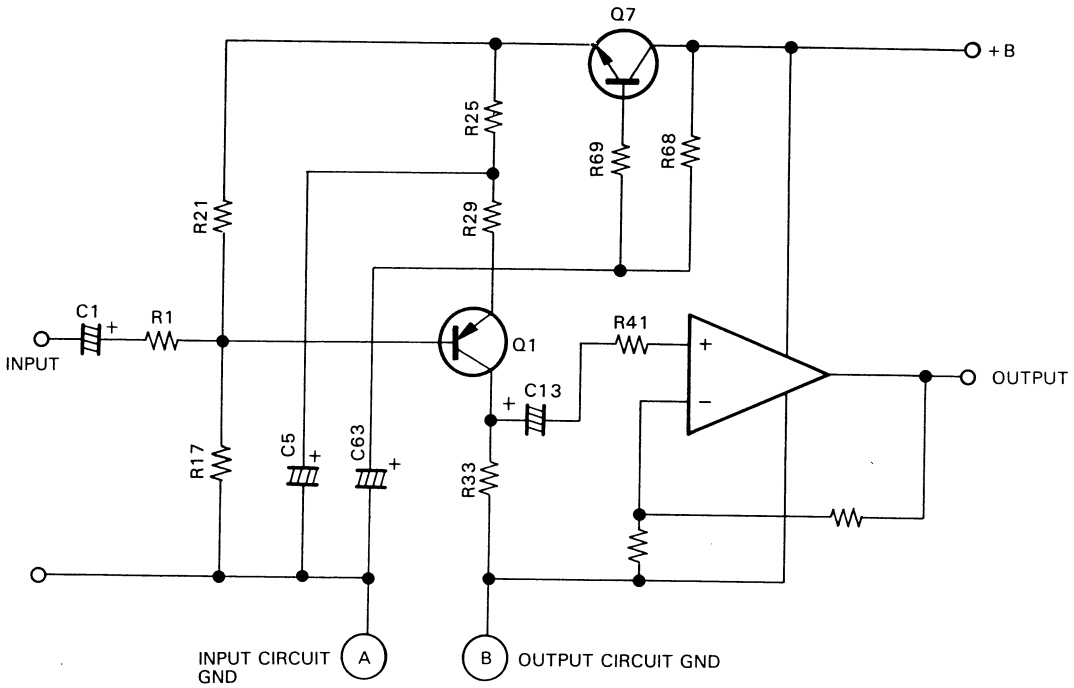


Fig. 5 ISOLATION AMPLIFIER

Each car audio component is generally grounded to an appropriate point on the car body. Therefore, equipment connected to the power amplifier may have a grounding point different from that of the power amplifier. If there is a potential difference between the grounding points, it will be reproduced as a noise in the speakers. In the KAC-887, the input circuit ground is isolated from that of the power amplifier circuit by using an isolation amplifier so that noise is reduced. Transistors Q1 and Q7 in Figure 5 operate as an inverting amplifier and a ripple filter, respectively, when there is no potential difference between the ground of the input circuit Ⓐ and that of the power amplifier Ⓑ. This is because the circuit is equivalent to the circuit in which Ⓐ and Ⓑ are connected. Assume that an AC noise source, E_N is connected between Ⓐ and Ⓑ as shown in Figure 6. The impedance of C63 is negligible when an AC signal is dealt with; therefore, E_N is applied to the base of Q7 with its phase and amplitude unchanged and is added to the DC voltage (V_E) at the emitter of Q7. Thus, the base voltage of Q1 is given by

$$V_B = \frac{R21\,(V_E + E_N) + R17E_N}{R21 + R17} = \underbrace{\frac{R21V_E}{R21 + R17}}_{\text{DC voltage}} + \underbrace{E_N}_{\text{Noise}}$$

This indicates that E_N is applied to the base of Q1. On the other hand, E_N is applied to the connection between R25 and R29 since the impedance of C5 is negligible. Therefore, the voltage level at both the base and emitter vary according to E_N and there is no change in potential difference between the two. Thus, E_N is not output from the collector of Q1.

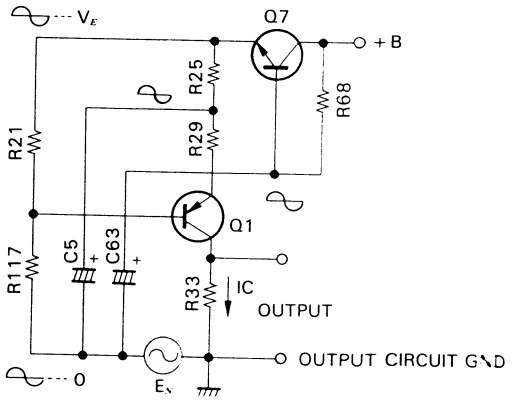
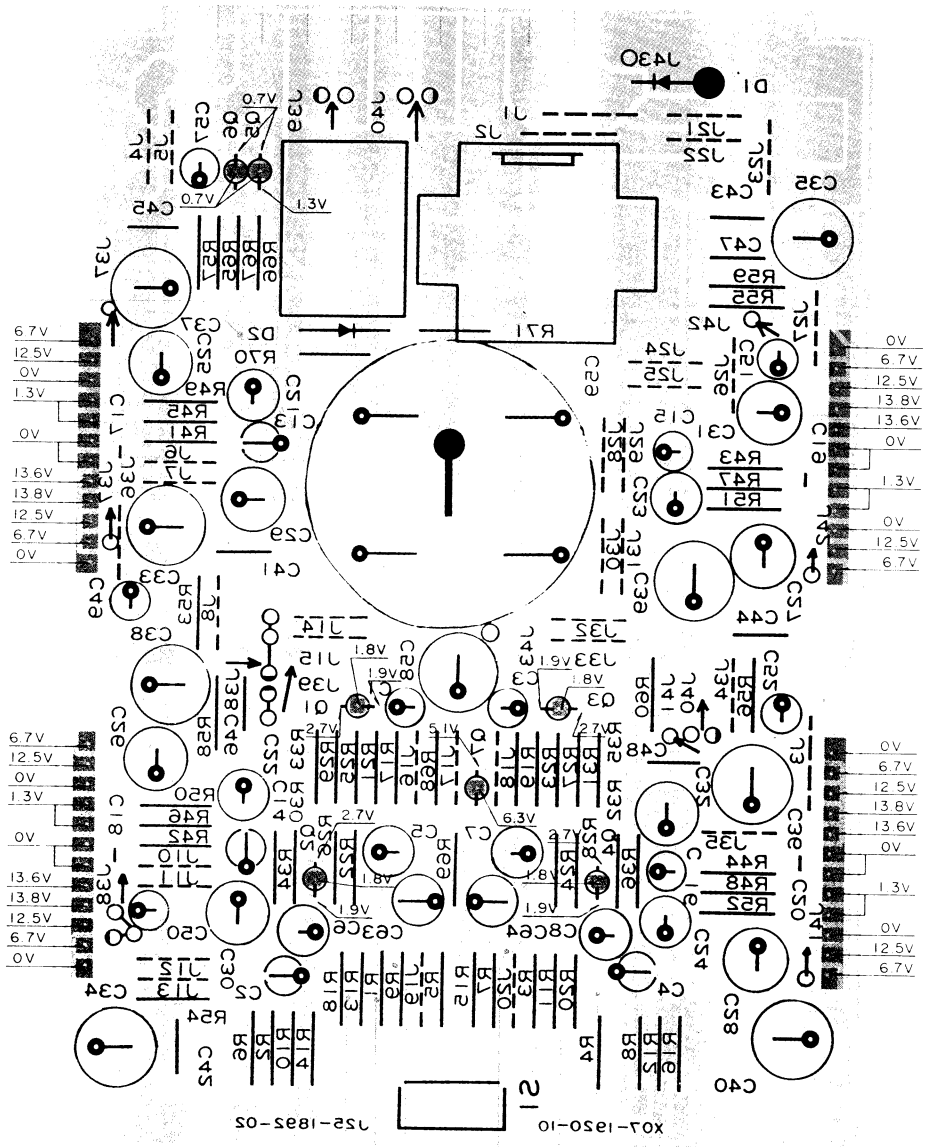


Fig. 6

PC BOARD

POWER AMPLIFIER (X07-1920-10) Foil side view

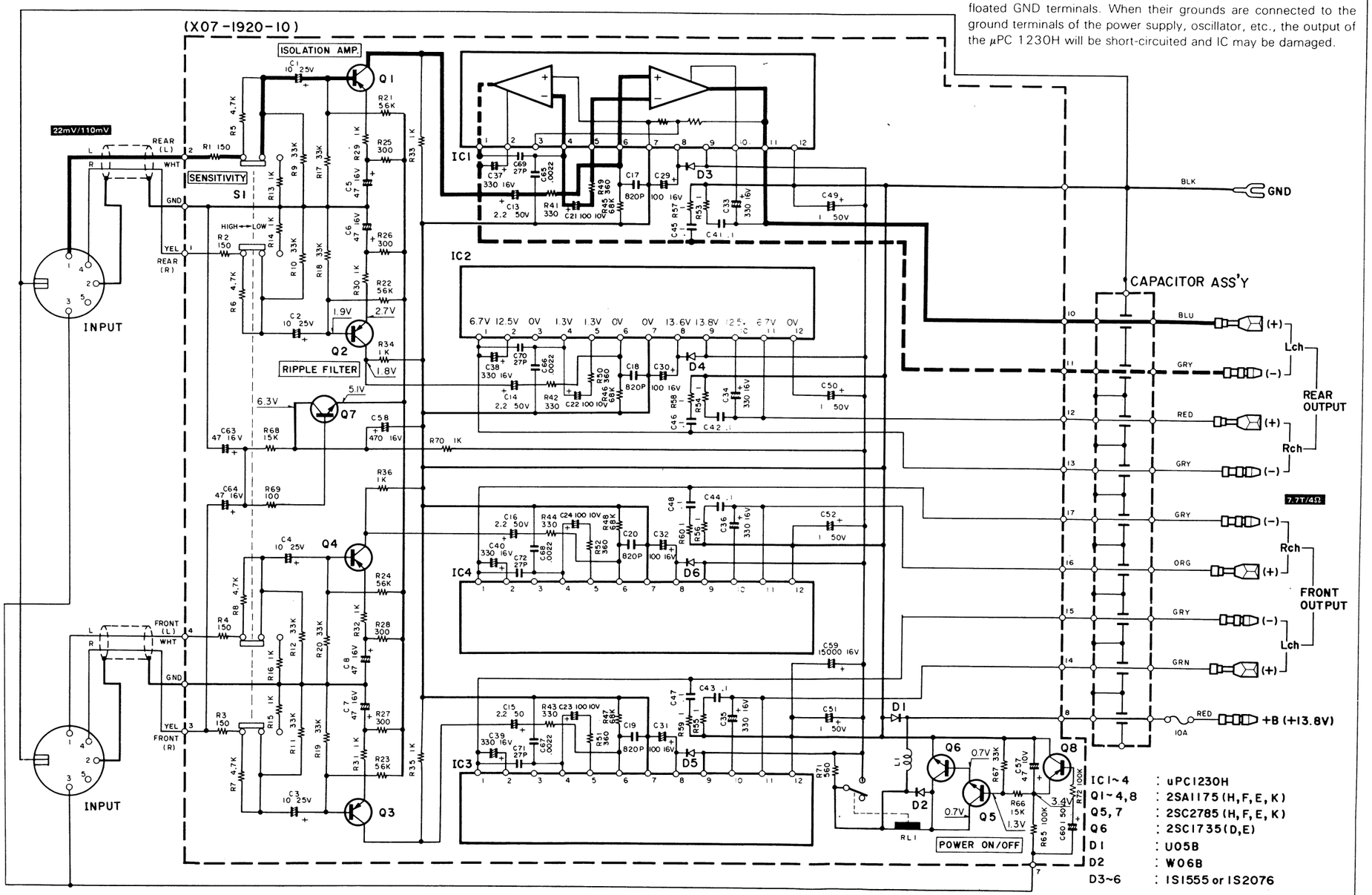


Note: Refer to the schematic diagram for the values of resistors and capacitors.
The PC board drawing is viewed from the side easy to check.

KAC-887

CAUTION

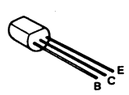
This amplifier uses the BTL connected circuit as mentioned before, so make sure of the following. Since the ground line of the amplifier is floated, when connecting the measuring instruments (oscilloscope, VTVM, distortion meter, load resistors etc.), make sure to use the floated GND terminals. When their grounds are connected to the ground terminals of the power supply, oscillator, etc., the output of the μPC 1230H will be short-circuited and IC may be damaged.



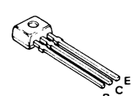
IC1~4 : μPC1230H
Q1~4,8 : 2SA1175 (H, F, E, K)
Q5, 7 : 2SC2785 (H, F, E, K)
Q6 : 2SC1735 (D, E)
D1 : U05B
D2 : W06B
D3~6 : 1S1555 or 1S2076

KAC-887(K)

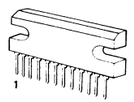
2SC1735



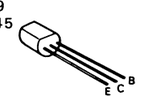
2SA1175
2SC2785



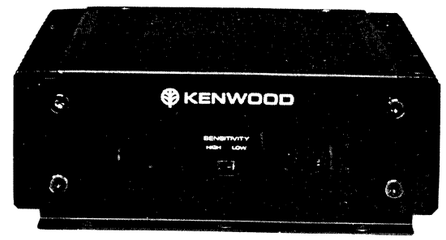
μPC 1230H



2SA733, 2SA999
2SC2003, 2SC945
2SC2320



DC voltages are measured by a VOM with 20 kΩ/V input impedance.



SPECIFICATIONS

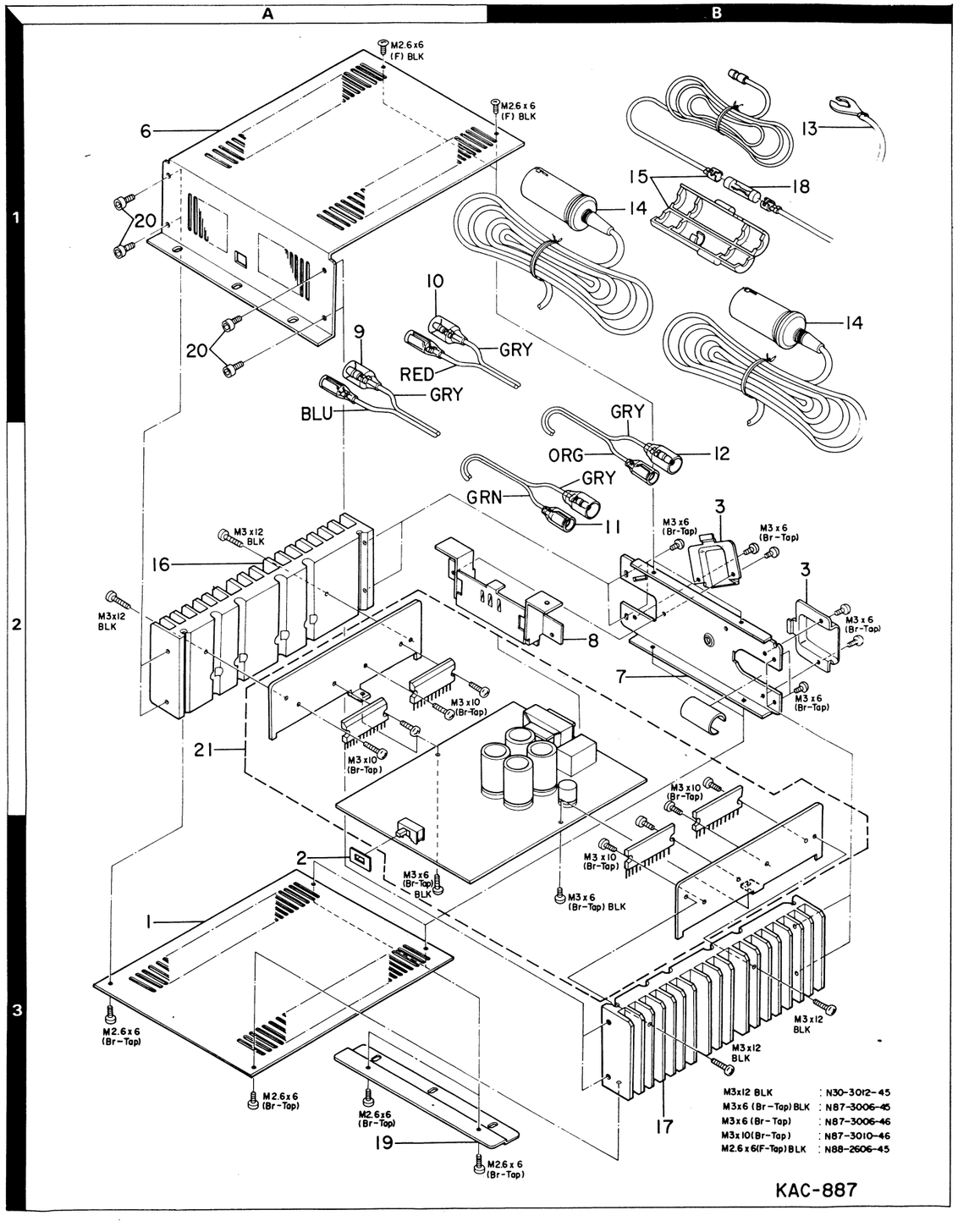
Total Output Power	60 W
Power per Channel	15 W into 4 Ω, 20~30,000 Hz, 1% THD
Total Harmonic Distortion	0.05% (at 1 kHz, 4 watts)
Frequency Response	20~50,000 Hz (±3 dB)
Signal to Noise Ratio	92 dB (A-weighted)
Input Sensitivity	22 mV/110 mV 1 W Output
Input Impedance	15 kΩ/5 kΩ
Load Impedance	4 Ω (4~8 Ω Allowable)
Power Source	14.4 V (11~16 V Allowable)
Dimensions (W×H×D)	142×53×158 mm
Net Weight	1.3 kg (2.9 lb)

Semiconductor Substitutions

Name	Substitutions
2SA1175	2SA733, 2SA999
2SC1735	2SC2003
2SC2785	2SC945, 2SC2320

KAC-887 KAC-887

EXPLODED VIEW



PARTS LIST

• : New parts.
Parts without **Parts No.** are not supplied.
Les articles non mentionnés dans le **Parts No.** ne sont pas fournis.
Teile ohne **Parts No.** werden nicht geliefert.

Ref. No. 参照番号	Parts No. 部品番号	Description 部品名／規格	Remarks 備考
KAC-887			
1 3A	-	BOTTOM PLATE	*
2 3A	-	BLIND SHEET	*
3 2B	-	HOLDER	
6 1A	A01-0411-03	METALLIC CABINET	*
7 2B	A23-1941-04	REAR PANEL	*
-	B46-0055-30	WARRANTY CARD	P
-	B46-0063-13	WARRANTY CARD	UH
-	B46-0063-13	WARRANTY CARD	UE
-	B46-0070-03	WARRANTY CARD	KU
-	B46-0070-03	WARRANTY CARD	UE
-	B46-0070-03	WARRANTY CARD	H
-	B46-0077-04	WARRANTY CARD	X
-	B50-3386-00	INSTRUCTION MANUAL	*K
-	B50-3386-00	INSTRUCTION MANUAL	UX
-	B50-3387-00	INSTRUCTION MANUAL	*P
-	B50-3387-00	INSTRUCTION MANUAL	EM
-	B50-3387-00	INSTRUCTION MANUAL	UE
-	B50-3387-00	INSTRUCTION MANUAL	H
8 2B	C91-0195-05	CAPACITOR ASSY	
9 1A	E30-0619-05	SPEAKER CORD (BLU/GRY)	
10 1A	E30-0620-05	SPEAKER CORD (RED/GRY)	
11 2B	E30-0621-05	SPEAKER CORD (GRN/GRY)	
12 2B	E30-0622-05	SPEAKER CORD (ORG/GRY)	
13 1B	E30-0626-05	GND CORD	
14 1B	E30-0633-45	DIN CODE	
15 1B	E30-0686-05	DC CODE	
16 2A	F01-0383-03	HEAT SINK (L)	*
17 3B	F01-0384-03	HEAT SINK (R)	*
18 1B	F05-1031-05	FUSE 250V 10A	
-	H01-3309-04	CARTON BOX	
-	H10-1584-02	POLYSTYRENE FIXTURE	
-	H12-0084-08	PACKING FIXTURE	
-	H25-0029-04	BAG	
-	H25-0067-03	BAG	
-	H25-0112-04	BAG	
-	H25-0173-04	BAG	
19 3A	J21-3029-04	MOUNTING HARDWARE	*
-	N99-0054-05	SCREW NUT SET	*
20 1A	N09-0390-05	HEX.SOCKET HEAD BOLT	*
21 2A,2B	X07-1920-10	POWER AMP PCB ASSY	*
POWER AMP (X07-1920-10)			
C1 -4	C24-1410-61	ELECTRO 10UF 25WV	
C5 -8	C24-1247-61	ELECTRO 47UF 16WV	
C13 -16	C24-1722-59	ELECTRO 2,2UF 50WV	
C17 -20	C52-1782-16	CERAMIC 820PF K	
C21 -24	C24-1010-79	ELECTRO 100UF 10WV	
C29 -32	C24-1210-79	ELECTRO 100UF 16WV	
C33 -40	C24-1233-71	ELECTRO 330UF 16WV	
C41 -48	C45-1710-46	MYLAR 0.1UF M	
C49 -52	C25-1710-57	ELECTRO 1UF 50WV	
C57	C24-1047-69	ELECTRO 47UF 10WV	
C58	C24-1247-71	ELECTRO 470UF 16WV	
C59	C90-0564-05	ELECTRO 15000UF 16WV	*
C60	C25-1710-57	ELECTRO 1UF 50WV	
C63 ,64	C24-1247-61	ELECTRO 47UF 16WV	
C65 -68	C45-1722-26	MYLAR 0.0022UF M	
C69 -72	C71-1727-06	CERAMIC 27PF J	
L1	L15-0023-05	CHOKE COIL	
RL1	S51-1032-05	RELAY	
S1	S31-4010-05	SLIDE SWITCH	
D1	V11-0270-05	U05B	
D2	V11-0295-05	W06B	
D3 -6	V11-0271-05	1S2076 OR 1S1555	
IC1 -4	V30-0620-10	UPC1230H	
Q1 -4	V01-1175-30	2SA1175(H,F,E,K)	
Q5	V03-2785-20	2SC2785(H,F,E)	
Q6	V03-0452-05	2SC1735(D,E)	
Q7	V03-2785-20	2SC2785(H,F,E)	
Q8	V01-1175-30	2SA1175(H,F,E,K)	

K: U.S.A. U: PX E: Europe M: Other area
P: Canada H: Audio club X: Australia
UE: AAFES

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